

Amendments to the Claims

Listing of Claims

1. (Currently amended) A framing shutter assembly for a luminaire providing a beam of light, said framing shutter assembly comprising:
  - a stack of plates having aligned central openings defining a light path through the shutter assembly, said light path having a longitudinal axis, a plurality of said plates being mounted for rotation relative to one another around said axis;
  - a shutter blade;
  - a first of said plurality of plates being a rotation guide plate having a guide slot extending from said central opening of said rotation guide plate, said guide slot receiving said shutter blade and mounting said shutter blade for translational motion into and out of said central opening of said first plate for selectively blocking a portion of said light path;
  - a second of said plurality of plates being a translation guide plate; and
  - a cam and follower combination including a first camming element on said translation guide plate and a second camming element on said shutter blade engaging said first camming element and moving said shutter blade along said guide slot in response to rotation of said translation guide plate relative to said rotation ~~said~~ guide plate.
2. (Original) A framing shutter assembly as claimed in claim 1, said first and second camming elements comprising an arcuate slot in said translation guide plate and a cam follower projection mounted on said shutter blade.
3. (Original) A framing shutter assembly as claimed in claim 1, said shutter blade being coplanar with said rotation guide plate.

4. (Original) A framing shutter assembly as claimed in claim 3, said shutter blade, said rotation guide plate and said translation guide plates all being made of sheet metal.

5. (Original) A framing shutter assembly as claimed in claim 3, said shutter blade, said rotation guide plate and said translation guide plates all being made of sheet metal having the same thickness.

6. (Original) A framing shutter assembly as claimed in claim 3, said shutter blade, said rotation guide plate and said translation guide plates all being made from a single piece of sheet metal.

7. (Currently amended) A framing shutter assembly comprising:  
a plurality of sheet metal rings having circular central openings, said rings being in a laminar formation with said circular central openings aligned to define a circular cylindrical nest;

a stack of a plurality of sheet metal circular plates ~~rotatably~~ received in said nest for rotation relative to one another, said plates having central apertures aligned to define a light path;

four of said circular plates being shutter guide plates having guide slots extending outward from said central apertures; and

four shutter blades slideably received in said guide slots for movement into and out of said light path.

8. (Original) The framing shutter assembly of claim 7, said plurality of sheet metal rings being equal in number to said plurality of circular plates.

9. (Original) The framing shutter assembly of claim 8, said sheet metal rings and said circular plates having the same thickness.

10. (Original) The framing shutter assembly of claim 9, said shutter blades being made of sheet metal having the same thickness as said circular plates.

11. (Original) The framing shutter assembly of claim 9, said sheet metal rings and said circular plates being made from a single sheet of metal.

12. (Original) The framing shutter assembly of claim 7, another four of said circular plates being shutter drive plates having cam structures, and said shutter blades having cam followers mating with said cam structures.

13. (Original) The framing shutter assembly of claim 12, said shutter guide plates being adjacent to one another in said stack.

14. (Original) The framing shutter assembly of claim 13, said shutter guide plates being sandwiched between pairs of said shutter drive plates.

15. (Original) The framing shutter assembly of claim 14, further comprising a pair of end plates attached to opposite ends of said nest to retain said circular plates in said nest, said end plates having central apertures aligned with said light path.

16. (Original) The framing shutter assembly of claim 12, said shutter guide plates including two pairs of identical circular plates and said shutter drive plates including two pairs of identical circular plates.

17. (Original) The framing shutter assembly of claim 7, each said sheet metal ring having a drive member receiving recess adjoining said circular central opening, and a plurality of drive members each received on one of said drive member receiving recesses and engaging the periphery of one of said circular plates.

18. (Original) The framing shutter assembly of claim 17, said circular plates having peripheral gear teeth and said drive members comprising sheet metal pinion gears meshed with said gear teeth. The framing shutter assembly of claim 7, each said sheet metal ring having a drive member receiving recess adjoining said circular central opening, and a plurality of drive members each received on one of said drive member receiving recesses and engaging the periphery of one of said circular plates.

19. (Original) The framing shutter assembly of claim 17, all of said sheet metal rings being identical.

20. (Original) The framing shutter assembly of claim 19, said sheet metal rings being oriented in said laminar formation so that said drive member receiving recesses are arrayed peripherally around the circumference of said nest.

21. (Original) The framing shutter assembly of claim 20, further comprising a pair of end plates attached to opposite ends of said nest to retain said circular plates in said nest, said end plates having central apertures aligned with said light path, a plurality of drive openings extending through said laminar formation intersecting said drive member receiving recesses, and a plurality of motors mounted adjacent at least one of said end plates and having drive shafts extending through said drive openings and connected to said drive members.

22. (Currently amended) A framing shutter assembly for shaping a beam of light, said framing shutter assembly comprising:

a stack of circular disks made of sheet material , said disks being mounted for rotation relative to one another around a common axis;

said disks having aligned central openings defining a light path for the beam of light;

a plurality of shutter blades;

a first plurality of said disks having recesses supporting said shutter blades for movement into and out of said light path; and

a second plurality of said disks having drive members engaging said shutter blades.

23. (Original) A framing shutter assembly as claimed in claim 22, further comprising a plurality of drivers for rotating said disks.

24. (Original) A framing shutter assembly as claimed in claim 23, said drivers including motors.

25. (Original) A framing shutter assembly as claimed in claim 22, further comprising a plurality of drive motors, and a plurality of drive members coupled between said drive motors and said disks.

26. (Currently amended) A shutter controlling subassembly for a shutter assembly, said shutter controlling subassembly comprising:

a shutter blade;

a first guide plate having a slot capturing said shutter blade plate in said slot in an orientation coplanar with said first guide plate;

a light path extending through said slot;

said slot holding said shutter blade plate for sliding movement within said slot relative to said light path;

a second guide plate parallel to said first guide plate;

a plate mounting structure mounting said first and second guide plates for simultaneous rotation and for independent rotation relative to one another; and

first and second cam elements defined respectively on said second guide plate and on said shutter blade plate, said cam elements engaging one another for sliding said shutter blade plate in said slot in response to rotation of said first guide plate relative to said second guide plate.

27. (Original) A method of making components of a framing shutter assembly from a single sheet of metal, said method comprising:

severing the following parts from the single sheet of metal:

a plurality of shutter blades

a plurality of rotation guide plates having central openings and guide slots for receiving the shutter blades; and

a plurality of translation guide plates having central openings and cams for translating the shutter blades;

loading the shutter blades into the guide slots in the rotation guide plates;  
and

stacking the rotation guide plates and the translation guide plates with their central openings in alignment.

28. (Original) The method of claim 27 further comprising:

severing from the single sheet of metal a plurality of ring members equal in number to the aggregate number of the rotation guide plates and the translation guide plates;

fastening the ring members to one another to form a nest for the stack of rotation guide plates and translation guide plates; and

placing the stack of rotation guide plates and translation guide plates into the nest.

29. (Original) The method of claim 28 further comprising:

making gear teeth on the peripheries of the rotation guide plates and the translation guide plates;

forming pinion gear cradles in the gear members;

said fastening step including locating the pinion gear cradles at peripherally spaced locations around the nest, each in alignment with the gear teeth of one of the rotation guide plates and the translation guide plates;

severing from the same sheet of metal a plurality of pinion gears; and

loading the pinion gears into the pinion gear cradles in engagement with the gear teeth of the rotation guide plates and the translation guide plates.

30. (Original) The method of claim 29 further comprising:

retaining the stack of rotation guide plates and translation guide plates and the pinion gears by attaching end plates to the nest at opposite ends of the stack of rotation guide plates and translation guide plates.